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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,232	09/02/2004	Meir Bartur	ZON1.MB.17	5231

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OPTICAL ZONU CORPORATION
15028 DELANO STREET
VAN NUYS, CA 91411

EXAMINER
LEE, DAVID J

ART UNIT	PAPER NUMBER
2613	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/711,232	BARTUR ET AL.	
	Examiner	Art Unit	
	David Lee	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 September 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 September 2004* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3 and 8-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Dennis et al. (US Patent No. 5,539,560).

Regarding claim 1, Dennis teaches an optical transceiver, comprising: a transmitter comprising a laser diode (diode 16 of fig. 1) and a laser driver providing a drive signal to the laser diode (driver 48 of fig. 1); a receiver comprising a photodiode (photodiode 32 of fig. 1) and signal recovery circuitry (processor 40 of fig. 1); and a microcontroller coupled to the transmitter and receiver (OTDR controller 12 of fig. 1) and providing a modulated power control current to the laser during an impulse test mode to transmit high optical power signal and monitoring received signals to detect reflections (e.g., see col. 4, lines 1-12).

Regarding claim 2, Dennis teaches that the transmitter and receiver are coupled to same fiber (fiber 24 of fig. 1).

Regarding claim 3, Dennis teaches that the modulated power control is controlling a laser driver that has modulation and bias power control inputs and wherein said microcontroller modulates said bias control input during said test mode (see e.g., col. 4, lines 1-8).

Regarding claim 8, Dennis teaches that the impulse test signal comprise a code sequence (see col. 4, lines 1-8: the varying of the light pulses is understood as a code sequence).

Regarding claim 9, Dennis teaches that the microcontroller is capable to detect the code sequence at the output of the comparator (the microcontroller is capable of detecting any signals reflected from a fiber break).

Regarding claim 10, Dennis teaches a method for detection of high optical reflection in a fiber optic network, comprising: transmitting an impulse test signal by modulating a laser transmitter (diode 14 of fig. 1) using an impulse test transmission mode which is different than a data transmission mode used during normal operating conditions (e.g., see col. 3, lines 64-67); and detecting any received signals modulated using said test transmission mode within a predetermined time period after said transmitting (e.g., see col. 4, lines 8-12).

Regarding claim 11, Dennis teaches that the test transmission mode comprises modulating the laser at a power level above the minimum threshold for normal data transmission (see col. 4, lines 1-8).

Regarding claim 12, Dennis teaches that the test transmission mode comprises modulating the laser at a frequency substantially lower than during normal data transmission (see col. 7, lines 33-51: the test/normal modes operate at 1310/1550 nm; in the illustrate given in col. 4, line 4, the test mode is 1310 nm so the normal mode is set at 1550 nm).

Regarding claim 13, Dennis teaches measuring the time delay for receiving the reflected test pulse and determining the location of the reflection (this is OTDR – note OTDR controller 12 of fig. 1).

Regarding claim 14, Dennis teaches increasing the laser transmitter power during transmission of said short duration test pulse (e.g., see col. 4, lines 1-8).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dennis et al. in view of Kimbrough et al. (US Pub. No. 2002/0063924 A1).

Regarding claim 4, Dennis teaches the limitations of claim 1 but does not expressly disclose that the microcontroller employs a dedicated transistor for direct high current impulse drive of the laser. Kimbrough et al. teaches an optical transceiver comprising a laser diode (86A of fig. 6) which is directly driven by a dedicated transistor for high current impulse drive (80 of fig. 6). It would have been obvious to a skilled artisan at the time of invention to incorporate the transistor of Kimbrough in the transceiver of Dennis in order to increase the response and the accuracy of the laser diode.

Regarding claim 5, Dennis teaches the limitations of claim 1 including an amplifier coupled to the photodiode diode (see fig. 6: amplifier connected to the photodiode 32), wherein the microcontroller monitors the output of the amplifier (controller 12 monitors output through converter 36). Dennis does not expressly disclose that the amplifier is a transimpedance amplifier. However, transimpedance amplifiers are well known in the art. For example, Kimbrough teaches an optical transceiver comprising a photodiode (92 of fig. 6) and a transimpedance amplifier (102 and 104 of fig. 6). It would have been obvious to a skilled artisan at the time of invention to incorporate a transimpedance amplifier in the system of Dennis in

order to ensure a healthy signal to noise ratio and to increase bandwidth without increasing post-equalizer noise levels.

Regarding claim 6, the combined invention of Dennis and Kimbrough teaches a comparator coupled between the output of said transimpedance amplifier and said microcontroller for detecting signals at the output of the transimpedance amplifier (see fig. 6 of Kimbrough: note 106 – to comparator).

Regarding claim 7, the combined invention of Dennis and Kimbrough does not teach that the comparator detection level is controlled during the impulse test mode to be more sensitive than during data transport mode. However, it is well known to increase receiver sensitivity while detecting reflections from fiber breaks. This is done to ensure that all signals, no matter how weak, are all received by the transceiver. It would have been obvious to a skilled artisan at the time of invention to set the receiver sensitivity at a higher level during test mode in order to ensure comprehensive detection of reflected signals.

5. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dennis et al.

Regarding claim 15, Dennis does not expressly disclose increasing the detection sensitivity after the transmission of the said short duration test pulse. However, it is well known to increase receiver sensitivity while detecting reflections from fiber breaks. This is done to ensure that all signals, no matter how weak, are all received by the transceiver. It would have been obvious to a skilled artisan at the time of invention to set the receiver sensitivity at a higher level during test mode in order to ensure comprehensive detection of reflected signals.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Lee whose telephone number is (571) 272-2220. The examiner can normally be reached on Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

David Lee
Patent Examiner

JASON CHAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600